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# The Uses and Misuses of Statistical Proof in Age Discrimination Claims

## **Abstract**

When it comes to statistics, age discrimination is different than other forms of discrimination. In most discrimination cases we can take the protected population and make appropriate adjustments for necessary characteristics like education and compare the results to the other employee groups.

With age discrimination this method does not work. It doesn't work because the normal patterns of aging and promotion or wage increase distort the statistical result. Employees typically are promoted more quickly and receive the highest percentage wage increases in early years. However, they generally retain those benefits for life. Employees reach a high point in their careers and then age in those positions while younger employees who have not yet reached their highest level are promoted. These phenomena require special care in evaluating statistics in age discrimination cases.

## **Keywords**

age discrimination, statistical proof in age discrimination, statistical distortion in age cases

## **Disciplines**

Elder Law | Labor and Employment Law

# THE USES AND MISUSES OF STATISTICAL PROOF IN AGE DISCRIMINATION CLAIMS

*Tom Tinkham\**

## I. BACKGROUND AND THESIS

Over the last decade, the number and complexity of age discrimination cases brought in the United States has increased substantially, with many of the claims supported by statistical evidence and then rebutted by statistics offered by the defendant.<sup>1</sup> Courts have often looked to the law developed in discrimination cases involving sex or race for guidance in the later developing cases involving age discrimination. Because there are substantial differences in age employment relationships as compared to sex or race employment relationships, the importation of general statistical concepts from race and sex discrimination to age cases has not always been appropriate.<sup>2</sup> This problem is compounded by the fact that lawyers are often unfamiliar with statistical analysis and may assume that a statistical result in an age analysis has more significance than is in fact the case.<sup>3</sup>

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1. See Scott J. Adams & David Neumark, *Age Discrimination in US Labor Markets: A Review of the Evidence*, in HANDBOOK ON THE ECONOMICS OF DISCRIMINATION 187, 192 (William M. Rodgers III ed., 2006). Cases in federal court are brought under the Age Discrimination in Employment Act of 1967, 29 U.S.C. §§ 621-634 (2006). Most states have comparable statutes prohibiting age discrimination. See, e.g., *Cline v. Gen. Dynamics Land Sys., Inc.*, 296 F.3d 466, 475 (6th Cir. 2002) (Cole, J., concurring) (citing not only federal law, but also similar state law provisions).

2. See *Mastie v. Great Lakes Steel Corp.*, 424 F. Supp. 1299, 1321 (E.D. Mich. 1976); Paul Grossman et al., "Lies, Damned Lies, and Statistics": How The Peter Principle Warps Statistical Analysis of Age Discrimination Claims, 22 LAB. LAW. 251, 251 (2007).

3. See, e.g., *Hamblin v. Alliant Techsystems, Inc.*, 636 N.W.2d 150, 155 (Minn. Ct. App. 2001) (finding that the plaintiff did not offer evidence of a "comparably effective practice that

Finally, it is often the case that law follows science, but unfortunately in the area of age discrimination, there has been a lack of attention to the economics of age discrimination, perhaps because of the difficulties in measuring age discrimination.<sup>4</sup>

The essential problem in analyzing employment outcome based on age is that age, unlike race or sex, is not an immutable characteristic. In the ordinary course of life, people do not change race or sex, but they obviously change age. All of us age, and we do so such that the impact of aging becomes more obvious and pronounced over time, with the likelihood of both changes in perceived abilities and discrimination accelerating over time. Standard statistical analysis in discrimination cases generally takes the unprotected group and compares the treatment of that group to the treatment of the protected group to determine whether there is a statistically significant difference. In cases of sex and race discrimination, it is often fair to assume that with several adjustments, such as for education and experience, the result of an employment process, such as promotion or termination, ought to be equivalent between the two groups. Differences, if any, can be measured in terms of absolute numbers, standard deviations or percentages. With age discrimination claims, the statistical comparison is much more difficult and at times impossible.<sup>5</sup>

Existing discrimination case law makes clear that the groups to be compared for the analysis must in fact be comparable (similarly situated). For many purposes, older and younger workers are not easily compared. Moreover, many factors that can be appropriately considered by an employer in employment decisions correlate with age, but are not age. Some time ago, the Supreme Court concluded that decision factors that correlate with age, but are not age, when a basis for the employment decision, do not constitute a violation of the Age Discrimination in Employment Act of 1967 ("ADEA").<sup>6</sup> Thus, years of service in a company, even though years of service generally correlate with age, when used for terminating an employee to avoid vesting in a pension, is not a violation of the ADEA.<sup>7</sup>

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would cause a significantly lessened adverse effect on older employees").

4. Richard W. Johnson & David Neumark, *Age Discrimination, Job Separations, and Employment Status of Older Workers: Evidence from Self-Reports*, 32 J. HUM. RESOURCES 779, 780-81 (1997).

5. See *id.*; Robert D. Pritchard et al., *Interpreting Relationships Between Age and Promotion in Age-Discrimination Cases*, 69 J. APPLIED PSYCHOL. 199, 199 (1984).

6. See *Hazen Paper Co. v. Biggins*, 507 U.S. 604, 611 (1993); see also *Age Discrimination in Employment Act of 1967*, 29 U.S.C. §§ 621-634 (2006).

7. *Id.* (holding that a decision based on tenure with the company, which coordinates with age, was not actionable under the ADEA).

The most general problem of statistical analysis in age cases is that an analysis may tell you that there is a correlation between age and an employment practice, but the statistics will not tell you whether age caused the correlation. Assumptions about causation are often inappropriate in age cases. Correlation between age and salary or promotions is not enough because correlation is not causation.<sup>8</sup> For example, there is a generally recognized pattern of promotion where promotions come early in a career at a significantly faster rate than later in a career.<sup>9</sup> This may be the result of a rapid development of experience early in a career with the employer benefiting very substantially from that early development. With a later slowing of the rate of development, the promotion rate slows as well. It may also reflect the fact that most organizations are pyramid in shape, and as the employee ages, she moves up the pyramid, where promotion opportunities become scarce. Finally, it may reflect the fact that all of us, or nearly all of us, reach plateaus in our employment where we come to rest because we have reached the point at which our maximum capabilities match the responsibilities of the position. While declining physical ability may negatively impact older employees' performance in some jobs, that is unlikely to be the case in today's typical management or professional positions. Plateauing is most often the result of one's native ability and willingness to work at a particular rate. Because of this phenomenon, an assumption that differences in promotion rates between younger and older workers is discriminatory is unwarranted.

A similar phenomenon is well known with regard to employee compensation, with substantial increases coming early in a career and slowing over time.<sup>10</sup> This generally accepted wage curve means that employees late in their career have wages that exceed those of younger employees, but the younger employees have greater percentage increases. Again, this may reflect the greater rate of acquisition of knowledge and experience early in a career rather than later. In any event, these factors that correlate with age, but are not age, make it very difficult to compare newer, and thus younger, employees to older or more tenured employees. The "null" hypothesis—that given relatively minor adjustments, two groups should find equal employment treatment—does not apply for age studies. One should expect that more

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8. See *EEOC v. Francis W. Parker Sch.*, 41 F.3d 1073, 1078 (7th Cir. 1994) (holding that the EEOC's contention of disparate impact, based on statistical correlation alone, was insufficient to sustain a finding of age discrimination).

9. See Kristin McCue, *Promotions and Wage Growth*, 14 J. LAB. ECON. 175, 182 tbl.1 (1996).

10. See *id.* at 183 tbl.2.

senior employees are paid more. Because of the passage of time, senior employees have accumulated compounding increases over the years and generally hold higher positions in an organization, but at the same time, their annual percentage wage increases are smaller, and promotion rates are slower. The confounding problem for statistical analysis is to determine how much smaller or slower is normal in the absence of discrimination. The fact is that older and younger employees are not similarly situated.

The second problem that plagues statistical analysis in age discrimination cases results from the stratification of a company's workforce into hierarchal levels of management. Because of the passage of time and the effect of tenure, long tenured employees, that is, older employees, are generally more heavily represented in the higher levels of the organization, with the newer employees in the lower ranks. A statistical analysis purporting to analyze the entire workforce as one will fail to consider comparable employees because of the uneven distribution of age within the different strata of the workforce. The more senior and older employees are likely to have a slower promotion rate on average because of, among other reasons, their place in the corporate structure, with fewer promotions per eligible employee generally available toward the top of the pyramid.

Analysis of age discrimination by employment strata within an organization is just as problematic, but for different reasons. Because of the corporate pyramid issue, standard statistical analysis requires that a truly comparable analysis be done at distinct structural levels within the corporation to ensure that employees who are actually comparable are the subjects of the comparison. While this technique can be successful in sex or race cases, it is difficult or impossible to achieve an accurate result in an age case because of the censorship problem. In any given stratum, the most successful employees have moved on to the next stratum or the one above that, while the less successful employees who remain age in the position. New employees entering the stratum will on average be younger than those remaining. The most productive employees will move the fastest tend to be the youngest, and include those that will ultimately move well up the corporate ladder. Therefore, it can be reasonably expected that younger employees will have, on average, better evaluations and higher promotion rates in any given stratum than older employees. In essence, this is a censorship problem, because the most productive older employees in any strata have moved on and are not available as a part of the comparison. The typical statistical approach in stratifying the corporate structure results in the exclusion of the most successful older employees. Without adjustments,

this analysis will show a statistically significant advantage in promotion to younger employees, but the result may be caused by censorship rather than by discrimination.

A third significant problem in age discrimination statistical work is the fact that age is not a single characteristic such as race or sex.<sup>11</sup> Instead, it is a continuum. Outside of the fact that the federal age act is arbitrarily set at forty years old,<sup>12</sup> there is no particular reason to suspect that age discrimination begins at any particular age. In fact, it is reasonable to think that it is just as likely that persons in their forties may be the beneficiaries of affirmative employment decisions while persons in their sixties may suffer the reverse. The comparative statistical approach, which lumps together all employees forty through seventy years old, may obscure a problem for a particular segment of that group. On the other hand, singling out a particular age segment may be entirely arbitrary and designed by a party to maximize the statistical impact. The majority view in disparate impact cases is that it is improper to use subgroups; all persons over forty must be compared. In disparate treatment cases, using age subgroups for analysis has generally been permitted.<sup>13</sup>

Fourth, disputes about the legitimacy of variables to include in a regression are more pronounced in age discrimination cases. Employment decisions such as promotions, salary increases or terminations are often based on performance evaluations. To compare employees performing at the same level, evaluations should be included as a variable in the regression. Again, in an analysis of race and sex claims, one can reasonably expect that, with reasonable adjustments, performance evaluations between the groups should be equal. Unlike race and sex performance evaluations, evaluations separated by age are likely to show differences in the absence of discrimination. This is due to an expected average difference in performance between newer (and younger) employees in a stratum versus longer tenured (and older) employees. As employees reach their maximum employment stratum and age in that strata, one would reasonably expect that the employment evaluations of those individuals would, on average, be lower than a group of individuals who have recently moved into that employment stratum, some of whom will move on through the employment strata because of superior performance. While this pattern is logical and

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11. See RAMONA L. PAETZOLD & STEVEN L. WILLBORN, *THE STATISTICS OF DISCRIMINATION* § 7.1, at 7-4, § 7.2, at 7-4-7-5 (Thomson/West 2006).

12. 29 U.S.C. § 631(a) (2006).

13. *EEOC v. McDonnell Douglas Corp.*, 191 F.3d 948, 950-51 (8th Cir. 1999).

supported by economic research on promotions, there is no documentation of the extent of the difference that can be expected in evaluations absent age discrimination. Plaintiffs are likely to call evaluations tainted because they show a significant difference in favor of the unprotected age group. Employers will argue that the evaluations must be included as a part of the regression in order to fairly compare employees who are performing at similar levels within the organization.

Fifth, while the difference between practical significance and statistical significance is present in all statistical evaluations of discrimination, it is particularly significant in age cases because there are often large numbers of individuals available for comparative purposes and small differences correlated with, but not caused by, age will be magnified in the statistical analysis. While two or three standard deviations may be statistically significant for an inference of discrimination in some settings, that may not be true in age cases. Statistical significance is the measure of the likelihood that a particular result occurs by chance. With two standard deviations, for example, the likelihood of the result occurring by chance is less than five percent. This result, however, does not tell one whether the outcome is practically significant. First, when the regression does not include the significant non-age factors causing the result, the statistical significance is not probative of discrimination because the result may be caused by appropriate factors. Second, the statistical significance does not tell you the dimension of the difference. Alone it does not give you the number of people actually negatively impacted by the process selected for any particular evaluation. It will also not provide the degree of difference. For example, in an age-based salary discrimination claim, a highly statistically significant difference can relate to a practically insignificant salary difference.<sup>14</sup> In evaluating a class action or pattern and practice claim, a high level of statistical significance may relate to only a small fraction of the defined class. In an individual case, a high level of statistical significance will not tell you whether age caused the result in that individual situation.

These differences between age, sex and race patterns in employment result in a variety of difficult statistical problems for age cases that have only started to become apparent in court decisions. The purpose of this article is to explore those difficulties in the context of the typical legal issues presented by age discrimination cases, and to examine where and how standard statistical methodology may be helpful

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14. See Allan G. King, "Gross Statistical Disparities" as Evidence of a Pattern and Practice of Discrimination: Statistical Versus Legal Significance, 22 LAB. LAW. 271, 279 (2007).



despite these problems.

## II. COMMON STATISTICAL METHODOLOGY IN DISCRIMINATION CASES

The most typical statistical methodology is comparison. In age cases, one can compare the treatment of younger employees to older employees for purposes of looking at hiring, training, promotion, salary or termination. The problem is finding an appropriate group of each to use for the comparison, adjusting for factors that may correlate with age but are not age based. However, comparisons can also be used to measure change in employment decisions for the protected group over a period of time. One can look at the pattern of older employees' pay or promotion at an earlier point and compare it to the time of concern. A comparison can also be used to compare treatment of a group in one company division or one company to other divisions or other but similar companies. Differences that are not reasonably explained by differing economic circumstances can lead to an inference of discrimination.

A multiple regression analysis increases the sophistication of the statistical work but does not necessarily improve the reliability of the outcome.<sup>15</sup> Typically, the regression analysis seeks to identify factors unrelated to age, race or sex that may affect the outcome, identify the impact of those variables, and determine the remaining impact with regard to the difference in age, race or sex.<sup>16</sup> For example, if the employer argues that its hiring practices are significantly determined by education levels, the regression analysis will include a measure for the educational attainment of the different applicant pools. If the company makes independent decisions at different divisions within the company, the regression may examine applicant pools from each of those structural divisions within the company. The point of the regression analysis is to account for the factors that may lead to the decisions in question.

In 1977, the United States Supreme Court, in *Hazelwood School District v. United States*,<sup>17</sup> held that "[w]here gross statistical disparities can be shown, they alone may in a proper case constitute prima facie proof of a pattern or practice of discrimination."<sup>18</sup> In footnote fourteen

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15. This methodology identifies conditions that may impact the outcome (independent variables) of hiring, promotion, etc. (the dependent variable). The regression with independent variables seeks to predict the employment outcome, isolating the protected characteristic.

16. See, e.g., *Hazelwood Sch. Dist. v. United States*, 433 U.S. 299, 311-12 (1977) (discussing considerations, other than race, that need to be taken into account to determine the proper figures for comparison).

17. *Id.* at 299.

18. *Id.* at 307-08 (citation omitted).

of that opinion, the Court cites *Castaneda v. Partida*<sup>19</sup> for the proposition that, with a large sample, if the statistical disparity is greater than two or three standard deviations, it is probative of discrimination.<sup>20</sup> *Castaneda* involved a claim that a jury selection process resulted in an improper exclusion of minority citizens.<sup>21</sup> The request was for injunctive relief.<sup>22</sup> *Hazelwood*, however, involved a claim of discriminatory hiring by a school district, including questions of individual discrimination and damage.<sup>23</sup> Despite the limitation of the Court's conclusion to the "proper case," the Court's equation of a gross statistical disparity with two or three standard deviations has led to some obscuring of the practical significance of statistical differences. While two standard deviations means the probability of the event occurring by chance is five percent, and three standard deviations means the probability of it occurring by chance is less than three tenths of one percent, that will not necessarily inform us as to what caused the results or whether the difference is practically significant.<sup>24</sup>

The Equal Employment Opportunity Commission ("EEOC") uses an eighty percent rule as a measure of discriminatory conduct.<sup>25</sup> That rule asks whether the protected class is hired, retained, or promoted at less than eighty percent of the rate of those in the unprotected group.<sup>26</sup> A rate of less than eighty percent will be considered to have an adverse impact for disparate impact analysis.<sup>27</sup> This measure provides a better representation of the significance of the difference by focusing more on the practical impact of that difference. However, it is not particularly useful in small group analysis, nor is it alone helpful in sorting out the identity of the two groups to be compared, or the impact of factors other than age.

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19. 430 U.S. 482, 497 n.17.

20. *Hazelwood*, 433 U.S. at 309 n.14.

21. *Castaneda*, 430 U.S. at 485-87. *Castaneda* involved a standard deviation of twelve where equal treatment would have resulted in selection of approximately 688 Mexican-Americans instead of the 339 actually selected—a statistically and practically significant difference. *Id.* at 496-97 n.17. For purposes of injunctive relief, these differences were clearly actionable. *See id.* at 496.

22. *See id.* at 485-86 (discussing that respondent sought a new trial because of the discrimination in the grand jury selection process, which he wanted changed).

23. *Hazelwood*, 433 U.S. at 301, 303.

24. Daniel L. Rubinfeld, *Reference Guide on Multiple Regression*, in FED. JUDICIAL CTR., REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 179, 191 (2d ed. 2000); Paul Meier et al., *What Happened in Hazelwood: Statistics, Employment Discrimination, and the 80% Rule*, 1984 AM. B. FOUND. RES. J. 139, 163 (1984).

25. 29 C.F.R. § 1607.4(D) (2009).

26. *Id.*

27. *Id.*

In *Bazemore v. Friday*,<sup>28</sup> the Court considered the question of those variables to be included in a regression analysis.<sup>29</sup> In that case, black employees sued the North Carolina Extension Service and others for discrimination in salary.<sup>30</sup> There were multiple regression analyses performed with a number of independent variables, including education, tenure, and job title. In at least one regression, performance evaluations were also considered.<sup>31</sup> The district court claimed that performance was the key factor in determining salary and should have been used in all regressions.<sup>32</sup> The Court held: "Normally, failure to include variables will affect the analysis' probativeness, not its admissibility."<sup>33</sup> Footnote ten to that statement added: "There may, of course, be some regressions so incomplete as to be inadmissible as irrelevant; but such was clearly not the case here."<sup>34</sup> These statements have made it difficult to exclude statistical analyses in discrimination cases.<sup>35</sup>

In 1997, the Court decided the case of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,<sup>36</sup> holding that the trial courts had a responsibility to act as gatekeepers of expert witness testimony to ensure that the evidence presented met minimum standards of reliability.<sup>37</sup> The expert work must display "the same level of intellectual rigor that characterizes" the general practice of experts in the field.<sup>38</sup> The relationship today between *Daubert* and the *Bazemore* comment that failure to include variables will not affect admissibility is in some doubt where those variables are such that standard statistical practice would require inclusion of the variables to ensure analysis of truly comparable groups.<sup>39</sup>

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28. 478 U.S. 385 (1986).

29. *Id.* at 399-400 (Brennan, J., concurring).

30. *Id.* at 391-92.

31. *Id.* at 398.

32. *Id.* at 404 n.15.

33. *Id.* at 400; *Morgan v. United Parcel Serv. of Am., Inc.*, 380 F.3d 459, 468 (8th Cir. 2004) (citing *Bazemore*, 478 U.S. at 400).

34. *Bazemore*, 478 U.S. at 400 n.10.

35. *Morgan*, 380 F.3d at 468 ("While the omission of variables from a regression analysis may render the analysis less probative than it otherwise might be, it can hardly be said, absent some other infirmity, that an analysis must be considered unacceptable as evidence of discrimination." (quoting *Bazemore*, 478 U.S. at 400)); see also *Murphy v. PricewaterhouseCoopers, LLP*, 580 F. Supp. 2d 16, 29 (D.D.C. 2008) (stating plaintiff used statistical evidence to bolster his discrimination claim).

36. 509 U.S. 579 (1993).

37. *Id.* at 597.

38. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999).

39. See *Morgan*, 380 F.3d at 468 n.5; Sean W. Colligan, *In Good Measure: Workforce Demographics and Statistical Proof of Discrimination*, 23 LAB. LAW. 59, 65 (2007) ("[I]n any statistical study, the validity of the results will depend upon how accurately the statistical modeling

In any event, when admitted the analysis must consider groups sufficiently comparable to permit an inference of discrimination or the statistics alone will be insufficient to prevent summary judgment. If there are common and nondiscriminatory explanations for the disparity, logically it will be difficult to draw an inference of discrimination absent adjustments in the regression for those factors.<sup>40</sup> It is not yet clear who has the burden of demonstrating that a particular variable should be included or not included in the regression. The plaintiff can be seen as having the burden to demonstrate that the statistical evidence it presents is probative where the variable is one that is clearly relevant. Courts have concluded in those instances that the plaintiff has failed to demonstrate that the analysis creates an inference of discrimination.<sup>41</sup> On the other hand, some courts have concluded that even an incomplete comparative analysis creates at least an inference that the result is not due to chance.<sup>42</sup> In those cases, the report is admissible because it demonstrates part of the plaintiff's burden, and it is the responsibility of the defendant to show that a particular legitimate variable significantly affected the outcome so that the regression analysis result would be significantly modified by inclusion of that factor.<sup>43</sup> The allocation of the burden of demonstrating factors to be included in a regression is significant in age discrimination cases, particularly with regard to the inclusion of performance evaluations where, as in many cases, the employer relies upon such evaluations for its employment decisions. The allocation of burden may determine whether or not inclusion of performance evaluation data is necessary to make a report probative of discrimination.

### III. THE LEGAL FRAMEWORK FOR AGE CLAIMS HIGHLIGHTS THOSE AREAS WHERE STATISTICS MAY BE RELEVANT

Many age claims are brought as class actions. Developing class action law has resulted in greater emphasis on statistical evidence at the class certification stage then there has been in the past.<sup>44</sup> For

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reflects the real world process it is designed to study.”).

40. See *Morgan*, 380 F.3d at 471; see also *Adams v. Ameritech Servs., Inc.*, 231 F.3d 414, 425-27 (7th Cir. 2000).

41. See, e.g., *Hutson v. McDonnell Douglas Corp.*, 63 F.3d 771, 777 (8th Cir. 1995).

42. See, e.g., *Tagatz v. Marquette Univ.*, 861 F.2d 1040, 1044 (7th Cir. 1988).

43. See *id.* at 1044-45 (defendant rebutted plaintiff's statistical evidence by showing that if plaintiff had considered variables such as scholarly productivity or teacher evaluations, the results would have been significantly different).

44. See generally David S. Evans, *Class Certification, the Merits, and Expert Evidence*, 11 GEO. MASON L. REV. 1, 7-27 (2002) (discussing the split in the circuit courts over the use of

certification, Federal Rule of Civil Procedure 23(a) (“Rule 23”) requires a showing of numerous potential class members, commonality and typicality, in addition to a showing that the representative parties will fairly and adequately represent the class.<sup>45</sup> Generally, age actions seeking damages will be regarded as Rule 23(b)(3) class actions so that the parties seeking certification will also have to show that common questions predominate, and that the class action is superior to other available methods to resolve the dispute.<sup>46</sup> The requirements of commonality and predominance normally necessitate a statistical showing that adverse actions of the employer have generally impacted the class so that claims of a representative party are typical of other members of the defined class.

For decades, *Eisen v. Carlisle & Jacquelin*<sup>47</sup> was thought to limit the degree to which a court would examine statistical evidence offered at the certification stage.<sup>48</sup> *Eisen* distinguished between merits and Rule 23 analysis to hold that a court should not determine the merits of the case at the class certification stage.<sup>49</sup> In many types of class actions, including those involving discrimination claims, merit and Rule 23 questions often overlap.<sup>50</sup> Thus, in an age discrimination case, the plaintiff might develop statistical evidence to show a pattern and practice of age discrimination, as well as to show that an employer’s proffered explanation for the decisions was pretextual. This very same statistical evidence, however, would be used by the party to establish commonality and predominance. Historically, even where the defendant offered statistical evidence to rebut the plaintiff’s evidence, courts were reluctant to examine the statistical evidence in any detail and often credited the plaintiff’s evidence without examination to avoid consideration of the merits of the case.<sup>51</sup>

This lack of rigorous analysis of statistical evidence offered at a certification stage is rapidly changing. The newest decisions are establishing several propositions relevant to this issue. First, the parties seeking certification must show by a preponderance of the evidence,

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evidence that goes towards the merits during the class certification process).

45. FED. R. CIV. P. 23(a).

46. *Id.* 23(b)(3).

47. 417 U.S. 156 (1974).

48. *Id.* at 177; Colligan, *supra* note 39, at 63 (citations omitted).

49. *Eisen*, 417 U.S. at 177-78 (citations omitted).

50. *E.g.*, Whitaker v. 3M Co., 764 N.W.2d 631, 638 (Minn. Ct. App. 2009) (showing the overlap of questions of merit and Rule 23 at the class certification stage of an age discrimination suit).

51. *See, e.g.*, Hnot v. Willis Group Holdings, Ltd., 241 F.R.D. 204, 210 (S.D.N.Y. 2007); Hnot v. Willis Group Holdings, Ltd., 228 F.R.D. 476, 483 (S.D.N.Y. 2005).

rather than simply establishing a *prima facie* case, that the Rule 23 elements are met.<sup>52</sup> Second, the court deciding certification must weigh the evidence, including the evidence offered by the responding party, to determine whether the elements of Rule 23 are met.<sup>53</sup> Finally, the court should examine the expert testimony, including the statistical evidence presented, resolve disputes and make a determination whether, by a preponderance of the evidence, that evidence satisfies the requirements of Rule 23.<sup>54</sup>

In the context of age discrimination cases this developing law means that the issues of statistical validity will come before the court at a relatively early point in the litigation. The parties will be forced to fully develop statistical evidence for a class certification hearing. The court will be required to assess the validity of the statistical evidence offered to determine whether there is commonality and, in damage cases, whether common questions predominate across the class. While this procedure is in place, there is of yet no answer to the question of the necessary probative power of the statistical evidence to establish commonality and predominance. To what degree will the courts insist that comparisons be made between groups that share common attributes? Will the statistical evidence be required to show that a significant portion of the class has the same claim as the representative parties?

While recognizing that discrimination by definition relates to a class, the Supreme Court held: "Conceptually, there is a wide gap between (a) an individual's claim that he has been denied promotion on discriminatory grounds, and his otherwise unsupported allegation that the company has a policy of discrimination, and (b) the existence of a class of persons who have suffered the same injury . . . ."<sup>55</sup>

In the context of class certification, it is typically statistical evidence, augmented by anecdotal evidence, which seeks to fill this "wide gap." The use of statistics for class certification presents two general questions: how reliable are the statistics to create an inference of discrimination, and what is the class of persons that statistics can identify?

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52. *Teamsters Local 445 Freight Div. Pension, Fund v. Bombardier Inc.*, 546 F.3d 196, 202 (2d Cir. 2009); *In re Hydrogen Peroxide Antitrust Litig.*, 552 F.3d 305, 307 (3d Cir. 2008).

53. *Hydrogen Peroxide*, 552 F.3d at 307; *In re Initial Pub. Offerings Sec. Litig.*, 471 F.3d 24, 42 (2d Cir. 2006).

54. *Hydrogen Peroxide*, 552 F.3d at 307; *Whitaker*, 764 N.W.2d at 638. See also *Blades v. Monsanto Co.*, 400 F.3d 562, 567 (8th Cir. 2005) ("Nonetheless, such disputes may be resolved only insofar as resolution is necessary to determine the nature of the evidence that would be sufficient, if the plaintiff's general allegations were true, to make out a *prima facie* case for the class.").

55. *Gen. Tel. Co. v. Falcon*, 457 U.S. 147, 157 (1982).

Generally, discrimination claims are brought as disparate impact claims, disparate treatment claims, or both.<sup>56</sup> Disparate impact claims identify an apparently neutral employment process and demonstrate that the result is discriminatory.<sup>57</sup> The particular portion of a plan or system causing the discrimination must be identified specifically.<sup>58</sup> There must be a causal connection between the identified system and the disparity.<sup>59</sup> The employer may defend by offering a reasonable basis other than age for the decision.<sup>60</sup>

Disparate treatment claims, on the other hand, require a showing that a particular decision was motivated by bias.<sup>61</sup> Because disparate impact claims relate solely to a process and its result, statistical evidence is typically required.<sup>62</sup> With the proper statistical analysis, commonality and predominance for class certification in disparate impact claims is often apparent. Disparate treatment claims, however, are typically individual in nature and are difficult to certify.<sup>63</sup> To establish predominance, disparate treatment claims require a demonstration of at least a pattern or practice or a common decision maker so that significant evidence will be common.<sup>64</sup> Even with these factors in place, in most disparate impact cases, individual questions will be more significant than common questions, because the essence of each claim will depend on an analysis of one person's qualifications compared to others.

The individual age action can be brought on the basis of direct evidence, where the plaintiff can offer statements by the decision makers that show a direct age bias. In that event, statistical evidence may not be necessary. However, most age cases proceed on the basis of circumstantial evidence rather than direct evidence and follow the familiar pattern of the *McDonnell Douglas Corp. v. Green*<sup>65</sup> analysis applicable in other types of discrimination claims.<sup>66</sup> By that analysis, the

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56. See *Evers v. Alliant Techsystems, Inc.*, 241 F.3d 948, 953 (8th Cir. 2001).

57. *Id.* at 953 (citation omitted).

58. *Smith v. City of Jackson*, 544 U.S. 228, 241 (2005) (citation omitted).

59. See *Evers*, 241 F.3d at 954.

60. See *Smith*, 544 U.S. at 240-41.

61. See *Evers*, 241 F.3d at 955.

62. *Id.* at 953 (citation omitted).

63. *Talley v. ARINC, Inc.*, 222 F.R.D. 260, 266, 270 (D. Md. 2004) (citation omitted).

64. See *id.* at 266 (citation omitted); *Wright v. Circuit City Stores, Inc.*, 201 F.R.D. 526, 539 (N.D. Ala. 2001).

65. 411 U.S. 792, 802 (1973).

66. See *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 142 (2000). The Court had not addressed the question of whether the *McDonnell Douglas* framework applies to age discrimination suits, but assumed it was applicable. *Id.* This procedure has been noted by the Supreme Court, but not yet approved in age cases. In age cases where the legitimate reasons for differences in treatment between older and younger workers outweigh the likelihood of invidious

plaintiff proceeds to establish a prima facie case based upon relevant but minimal evidence demonstrating that the plaintiff was (1) a member of a protected class; (2) the employee performed the duties of the job adequately; (3) the employee was not promoted, discharged or not given an appropriate raise; and (4) persons in the non-protected class were treated more favorably either in pay, promotion or retention.<sup>67</sup> Meeting the four part prima facie test, including demonstrating that members in the protected class were treated less favorably than others, creates an inference of discrimination for a prima facie case.

In the circumstantial case, after the employee has established a prima facie case, the burden of production, but not of persuasion, shifts to the employer, who must articulate a nondiscriminatory reason for the contested employment action.<sup>68</sup> The Age Discrimination in Employment Act permits the employer to differentiate “based on reasonable factors other than age.”<sup>69</sup> After the employer’s explanation, the burden is on the employee to establish that the employer’s offered reason is a pretext.<sup>70</sup> Evidence of pretext is sufficient to allow a jury to conclude that the motive was discriminatory.<sup>71</sup> Significantly stronger evidence is necessary to show pretext than for a prima facie case because it is now necessary to eliminate the employer’s offered explanation.<sup>72</sup> Statistical evidence often plays a significant role in this proof pattern. The parties may offer conflicting statistical evidence as to whether persons in the protected class generally were treated less favorably than others. The same evidence may be offered or augmented to show that the employer’s stated reason does not statistically explain the adverse impact on the protected class and thus is a pretext.

The extent to which the regression analysis includes the most significant factors that may impact employment decisions should, along with an analysis of the results’ practical significance, determine whether an inference of discrimination is appropriate. However, statistical correlation is not causation, and individual decision facts in a disparate treatment case must ultimately determine whether discrimination caused

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reasons, establishing a prima facie case based solely on different treatment is not compelling. The issue of age discrimination is more appropriately resolved on proof that the employer’s explanation is a pretext.

67. *See id.*

68. *Gross v. FBL Fin. Servs., Inc.*, 129 S. Ct. 2343, 2351 (2009). Even in mixed motive cases, the burden of proof never shifts from the plaintiff. *See id.* at 2355 (Stevens, J., dissenting).

69. 29 U.S.C. § 623(f) (2006).

70. *Reeves*, 530 U.S. at 143 (citations omitted).

71. *Id.* at 148.

72. *Jones v. United Parcel Serv., Inc.*, 461 F.3d 982, 992 (8th Cir. 2006) (citation omitted).



an individual result.<sup>73</sup>

*Bazemore* established a relatively low standard of admissibility for statistical evidence in discrimination cases.<sup>74</sup> The failure to include a variable will affect the probative value, but not necessarily the admissibility, unless the comparison or regression is obviously incomplete.<sup>75</sup> As discussed earlier, *Daubert*, however, suggests that where a regression is so incomplete that it can be said that experts in the field would generally not conclude the analysis was appropriate, a court should exclude the expert testimony and statistical analysis.<sup>76</sup> Admissibility, however, does not mean that the statistics are sufficient to demonstrate a portion of the prima facie case; that is, that members of the protected class were treated less favorably than others.<sup>77</sup> If clearly legitimate reasons that may explain the disparity are not included in the regression analysis, the analysis may not be sufficiently probative to even demonstrate less favorable treatment of the protected group.<sup>78</sup>

However, the issue at the prima facie stage is whether the protected group received less favorable treatment. Since the circumstantial test at this stage does not require demonstrating the reason for this treatment, a statistical comparison that does not exclude all permitted reasons may be considered probative. Even where the study demonstrates sufficient inferential power to constitute evidence that a group was treated less favorably, it may not be sufficient to demonstrate pretext. For example, if the employer's explanation for the disparate treatment is that a history of evaluations explains the disparate result, unless the statistical study is regressed for the evaluation results or there is a demonstration that the evaluations themselves result from discriminatory behavior, the statistical study will not provide the necessary evidence of pretext.<sup>79</sup> Absent a showing that the employer's offered explanation does not explain the unfavorable treatment, the employer's reason stands un rebutted and pretext is not shown.

Despite the comment in *Bazemore*, because of the low threshold for relevance, even inadequate statistical evidence is generally considered

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73. See, e.g., *Morgan v. United Parcel Serv. of Am., Inc.*, 380 F.3d 459, 466 (8th Cir. 2004); *Krieg v. Paul Revere Life Ins. Co.*, 718 F.2d 998, 1002 (11th Cir. 1983).

74. See *Bazemore v. Friday*, 478 U.S. 385, 400-01 (1986).

75. See *Diehl v. Xerox Corp.*, 933 F. Supp. 1157, 1167 (W.D.N.Y. 1996).

76. See *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579, 589-90 (1993). But see *Diehl*, 933 F. Supp. at 1167.

77. See *Licausi v. Symantec Corp.*, No. 08-60544, 2009 U.S. Dist. LEXIS 55294, at \*32 (S.D. Fla. June 30, 2009) (citations omitted).

78. See *id.* (citation omitted).

79. See, e.g., *Evers v. Alliant Techsystems, Inc.*, 241 F.3d 948, 958-59 (8th Cir. 2001).

relevant.<sup>80</sup> Rule 401 of the Federal Rules of Evidence defines “[r]elevant evidence” as “evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.”<sup>81</sup> If a study is done that does not contain the appropriate elements in the regression but compares the protected and unprotected class, concluding that there is a significant statistical deviation, this study, flawed as it may be, demonstrates that the results of an employer’s decision process is not random as between protected and unprotected groups. It is of consequence to the ultimate determination as to whether the protected class is treated less favorably. The fact that there is an adverse result for the protected group that it is not random has at least a tendency to make it more likely that the class suffered discrimination, and the evidence is relevant. Again, whether that relevant evidence has any ultimate power to create an inference either that the distinction was age-related or that the employer’s offered reason is pretextual is an entirely different matter.

The plaintiff’s evidence must establish that “but for” age, the plaintiff would have been retained, promoted or given additional compensation.<sup>82</sup> It is no longer sufficient simply to show that age was a factor in the decision.<sup>83</sup> There must now be a demonstration that it was the factor leading to the adverse result.<sup>84</sup> Moreover, the decision must have been based on age, rather than a phenomenon that is not age but correlates with age.<sup>85</sup> For example, in *Hazen Paper Co. v. Biggins*,<sup>86</sup> the employer based its decision on the length of the employee’s tenure, which would have shortly resulted in a vested pension benefit.<sup>87</sup> The Court distinguished length of service from age, even though the two clearly correlate, concluding that this employment decision did not run afoul of the ADEA.<sup>88</sup> To be substantially probative, statistical analysis must account for factors that correlate with age but are not age.<sup>89</sup> Thus,

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80. *Bazemore v. Friday*, 478 U.S. 385, 400 (1986) (Brennan, J., concurring) (“While the omission of variables from a regression analysis may render the analysis less probative than it otherwise might be, it can hardly be said, absent some other infirmity, that an analysis which accounts for the major factors ‘must be considered unacceptable as evidence of discrimination.’”).

81. FED. R. EVID. 401.

82. *Gross v. FBL Fin. Serv., Inc.*, 129 S. Ct. 2343, 2350 (2009) (citation omitted).

83. *Id.* at 2349.

84. *Id.* at 2350 (citation omitted).

85. *See id.* at 2351.

86. 507 U.S. 604 (1993).

87. *Id.* at 607.

88. *Id.* at 608-09, 611.

89. *See id.* at 611.

if employee evaluations, promotion rates, or pay increases correlate with age, but may be caused by events such as prior promotions or prior pay raises, those must be considered in any comparison to truly show age discrimination.

#### IV. STATISTICAL EVIDENCE OF AGE DISCRIMINATION IN COMPENSATION CLAIMS

In compensation discrimination cases involving age or sex, after adjustments for perhaps education, position and tenure, one can reasonably assume that compensation results will be relatively equal across gender and racial lines. While it is not without controversy, the same cannot be said with regard to age and compensation. Economists generally recognize an age/wage curve.<sup>90</sup> The age/wage curve recognizes that as tenure in the workforce, and thus age, increase, wages or salary increase steeply in early years, and flatten or even slightly decrease in later years.<sup>91</sup> Economists generally ascribe this phenomenon to the fact that early in a career a person develops job skills at a rapid rate and as one becomes more accustomed to the job, the rate of increase in skill, warranting increased compensation declines.<sup>92</sup> The fact that there is an early very substantial increase in skill or ability in a job leads to a rapidly increasing salary, but then both level out over the course of years. This phenomenon is generally accepted as representative of the compensation pattern in the workforce in the United States.<sup>93</sup> The

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90. See, e.g., WALTER B. CONNOLLY, JR. ET AL., *USE OF STATISTICS IN EQUAL EMPLOYMENT OPPORTUNITY LITIGATION* § 10.05(1)(b) (2009); Kevin M. Murphy & Finis Welch, *Empirical Age-Earning Profits*, 8 J. LAB. ECON. 202, 202 (1990).

91. See, e.g., *Tagatz v. Marquette Univ.*, 861 F.2d 1040, 1045 (7th Cir. 1988) (Professors' "salaries tend to rise rapidly in the early stages of their career and to reach a plateau when the academic becomes a full professor."); Murphy & Welch, *supra* note 90, at 204, 206 (based on the authors' statistical analysis of the wages of a group of white men between 1964 and 1987, wages increased early in the career and declined slightly as the men approached retirement age). A Bureau of Labor Statistics Study of 9964 people reported the following average wage increases by age category: 18-22—7%; 23-27—5.3%; 28-32—3.1%; 33-37—3.6%; and 38-42—1.4%. News Release, U.S. Dep't of Labor: Bureau of Labor Statistics, Number of Jobs Held, Labor Market Activity, and Earnings Growth Among the Youngest Baby Boomers: Results from a Longitudinal Survey tbl.5 (June 27, 2008), available at <http://www.bls.gov/news.release/pdf/nlsoy.pdf>.

92. See, e.g., Robert H. Topel & Michael P. Ward, *Job Mobility and the Careers of Young Men*, 107 Q.J. ECON. 439, 474 (1992) ("[T]he key element leading to the eventual durability of jobs is the wage, growth of which is largely an outcome of the search process itself . . . and the decline in average mobility as experience accumulates is mainly attributable to locating . . . a [good] match.").

93. See generally Murphy & Welch, *supra* note 90, at 207 fig.2 (showing that the actual average earnings of all men, regardless of education, increased rapidly in the beginning of their careers, then continued to increase at a slower pace before leveling off, and even slightly decreasing, at the end of their careers); News Release, U.S. Dep't of Labor, *supra* note 91, at 3

implication of this for any particular age/compensation case is that more tenured and, thus, older workers will generally have higher compensation at any point in time, but will also have lower periodic increases.

Some argue that this pattern represents the workforce generally, but not necessarily the result in any particular company.<sup>94</sup> It is argued that within a company, where employees are not changing employers, there should be continuing substantial increases in wage throughout the course of careers. This argument is at odds with the prevailing economic explanation for the phenomenon that there is a decrease in the rate of acquisition of knowledge, experience, and ability as employees increase tenure and age. There is no reason to believe this should happen any less if an employee remains in the same company. While a change of employers on average does result in higher pay, younger employees change jobs more often than older employees.<sup>95</sup> This may cause the general wage curve to become steeper in early years, but it should not substantially change the pattern that can be expected in any company with long tenured employees. Unfortunately, there are very few statistics from individual companies available to support or refute the argument. In the absence of specific company information, the countrywide data is the most convincing evidence available and is consistent with the economic theory.

With this pattern, older workers will generally be paid a higher salary than younger workers.<sup>96</sup> For the entire corporation, this reflects, in part, the fact that older workers tend to occupy the higher positions, which are best compensated, in the corporate structure. But the phenomenon is also true at any level in the corporate structure. In part, this reflects the fact that older workers tend to have more tenure on average than younger workers at any strata within the corporate structure. So, even within a single employment stratum, more senior employees will generally be paid more than younger employees, but they will, on average, have lower rates of increases in compensation. In part, this reflects a higher base salary for older employees so that an identical dollar increase will generate a higher percentage increase for a

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(discussing that, in a study of Americans born during the later years of the baby boom, earnings of workers "increased most rapidly while they were young," and then slowed as they got older).

94. See generally James N. Brown, *Why Do Wages Increase with Tenure? On-the-Job Training and Life-Cycle Wage Growth Observed Within Firms*, 79 AM. ECON. REV. 971, 990 (1989) ("[W]ages increase with tenure [at a particular firm] primarily because productivity increases with tenure.").

95. See McCue, *supra* note 9, at 181-82.

96. See, e.g., Adams & Neumark, *supra* note 1, at 201.

younger employee. Even the absolute dollar increases for the average older employee in any grade will be smaller than those received by the younger employees. This is a reflection of two factors. First, in any strata, the two groups of employees, older and younger, are performing much the same functions, but the older employees are being paid more. The younger employees performing as well at the same level can reasonably expect a greater increase in order to narrow the gap. Second, the difference in the rate of increase will often reflect a difference in performance reviews, with the average longer-term employees in any grade receiving an evaluation slightly lower than those employees newer to the particular grade.<sup>97</sup>

A typical annual salary increase regression for older and younger employees by strata will show a difference in favor of younger employees. At the same time, a regression for total salary will show a difference in favor of the older employees. This pattern may be argued to be detrimental to older employees because they receive smaller increases. Practically, it is not detrimental because early raises cumulate over time, and the older employee enjoys the benefit of that accumulation as long as he is retained by the company. In fact, this pattern is more beneficial to the older employee than uniform salary increases throughout a career. The early large increases provide a continuing benefit.

Pertinent information from a large American based industrial conglomerate is available to test these general propositions.<sup>98</sup> Using that company's 6000-based management employees as an example of salary distribution, as of 2005 the average salary for those under the age of thirty was \$67,384. That average salary climbed very substantially through the group ages forty-one through forty-five, and then more slowly so that the group sixty years and older had an average salary of \$118,889.<sup>99</sup> A regression analysis of total compensation prepared for the company, controlling for job level and other factors, demonstrated that managers older than age forty-six earned on average nearly \$2,000 more per year than managers younger than age forty-six.<sup>100</sup> The difference had widened substantially during the 2001-2005 timeframe. This

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97. See discussion *infra* p. 29.

98. The author has been counsel of record in defending a member of age discrimination claims. The statistical information referenced and also the information in the Appendix was part of the record in one of those proceedings. For statistical purposes, the claim period in that suit was 2001-2005.

99. See Appendix 1.

100. See Appendix 1. Forty-six years of age was the breakpoint chosen by plaintiffs for their class definition.

reflected a standard deviation of well in excess of three and was clearly statistically significant in favor of older workers. On the other hand, an expert for plaintiffs concluded that there was a significant statistical deviation in the compensation increases between groups over and under forty-six years old. These studies did not include all performance evaluation parameters or all prior experience as part of the regression. This expert went on to conclude, again without including performance in the regression, that employees over forty-six years old had about a .5% less annual percentage compensation increase than younger employees.

The wage studies in that situation illustrate the difficulty of measuring age discrimination in compensation by annual increases across age groups. First, unless the study includes a regression factor for base salary, it fails to compare truly comparable employee groups. Most employers will base annual compensation decisions, in part, on the employees' overall level of compensation, and older and younger employee groups have different base salaries. Second, without a regression variable for all performance factors considered by the employer in setting salaries, the study is unlikely to adequately represent comparable employees. Since comparable groups of older and younger employees are likely to have somewhat different evaluation results caused by factors other than age, a regression analysis without this factor will convey a misleading result. Finally, the large numbers involved in compensation regression analysis often obscure the lack of practical significance of the data.<sup>101</sup> Depending upon the regression factors used, the differences in compensation increase rates may well exceed two standard deviations and be statistically significant.

However, if the amount involved is, as reported above, in the neighborhood of .5%, the results may not be practically significant. Let us say, for example, the average salary is \$80,000 per year and the difference, without regard to performance, between older and younger groups is .5%; the actual dollar difference is \$400. Where older employees at any level are paid nearly \$2,000 per year more than younger employees, and that difference has increased in the recent past, a \$400 additional payment to younger employees as an annual raise has dubious practical significance. Given the expected difference in average performance between older and younger workers in a given stratum, much of that difference may disappear if performance is added to the regression.

A regression analysis of annual changes in compensation without controls for performance or base salary, absent evidence of why those

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101. See Rubinfeld, *supra* note 24, at 191-92.

factors should be eliminated, will not be probative of age discrimination.<sup>102</sup> A study that included those variables and also considered the stratification within the company would be significant in demonstrating the presence or absence of discrimination. It still would be necessary that the different amounts of compensation increases are practically significant.<sup>103</sup> There are, however, simpler and more satisfying ways to look at age discrimination and compensation. An analysis that considers total compensation and regresses for job level within the company should reflect a substantial compensation advantage to more senior employees due to tenure. A study that demonstrates that, on average, younger employees are paid more than older employees would be probative of discrimination. Additionally, unless satisfactorily explained, a significant modification of the company's historic pattern of overall compensation to the detriment of older employees would also be probative of age discrimination.

#### V. STATISTICAL EVIDENCE OF AGE DISCRIMINATION IN PROMOTION DECISIONS

In gender or race discrimination cases, a trier of fact can reasonably assume that, given appropriate adjustments, regression analysis should result in equality of promotion rates between the two measured groups. That is not the case with comparisons between younger and older employees. Generally, older employees are promoted less frequently than younger employees for reasons that have nothing to do with age discrimination.<sup>104</sup>

There are two separate phenomena that lead to this result. First, in most corporations there is a pyramid structure reflecting a corporate hierarchy, from beginning employees through managers, directors and, finally, officers. As one moves up this corporate pyramid, there are obviously fewer positions and often fewer opportunities for promotion. At lower levels, there are often in line promotions available, which depend on tenure or productivity regardless of openings. Younger employees will more frequently have these promotion opportunities.

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102. Whether past pay, and thus base salary, is discriminatory, so as to be a "tainted" variable, can also be subject to dispute. See, e.g., *Morgan v. United Parcel Serv. of Am., Inc.*, 380 F.3d 459, 470 (8th Cir. 2004). However, where older workers have significantly higher base salaries than younger comparable employees, a claim of historic "taint" will be difficult to establish.

103. See Pritchard et al., *supra* note 5, at 199.

104. Grossman et al., *supra* note 2, at 262 (citations omitted); see also Edward P. Lazear, *The Peter Principle: Promotions and Declining Productivity* 23, 26 (Nat'l Bureau of Econ. Research, Working Paper No. 8094, 2001), available at <http://www.nber.org/papers/w8094>.

Generally, the higher *ranks* will see greater concentrations of older versus younger workers. Thus, the older workers company-wide will have fewer opportunities for promotion, and where comparisons are done on a company-wide basis, the older employee group should have fewer promotions.<sup>105</sup>

Even if a company-wide regression analysis includes personnel evaluation results, this will not cure the pyramid problem. First, it simply will not cure the fact that there are fewer promotion opportunities available for older employees because they cluster at the top of the pyramid. Moreover, it is inappropriate to compare evaluations of older and younger workers across the entire corporate structure. Since older workers are typically concentrated more at the top of the pyramid,<sup>106</sup> they will have the harder jobs with the most rigorous competition, and their evaluations will reflect their more difficult environment.

Second, within any particular employment level of a company, on average, the younger employees in that stratum are likely to be better performers, and thus more promotable, than the older employees.<sup>107</sup> To illustrate this, take an example where six newly hired thirty-five-year-olds are in a particular stratum. Over the next five years, three of those employees are promoted to the next stratum, leaving behind three forty-year-olds. During that time, the company hires three additional thirty-five-year-olds, who have the same average talent as the earlier class. However, the most talented persons from the original class, all of whom are now forty years old, have moved on. The lesser talented forty-year-olds are now competing against the average talent of the thirty-five-year-olds. Assuming a reasonably accurate promotion system, it is likely that more of the promotions over the next five years will come from the younger group. As time moves on, this process is repeated, with the persons who are aging in a particular stratum less and less likely to be promoted simply because those with the superior talent in that age group have already been promoted. Absent adjustments for speed of success or performance evaluations, any promotion study of a particular employment stratum is very likely to show a significant standard deviation for promotion rates between older and younger employees in the stratum, but this will reflect performance differences, even in the absence of discrimination.

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105. See, e.g., *Beers v. Nynex Material Enters. Co.*, No. 88 Civ. 0305 (MBM), 1992 WL 8299, at \*7-\*8 (S.D.N.Y. Jan. 13, 1992).

106. See Pritchard et al., *supra* note 5, at 200.

107. See *Evers v. Alliant Techsystems*, 241 F.3d 948, 958 (8th Cir. 2001); *Cope v. McPherson*, 594 F. Supp. 171, 175 (D.D.C. 1984); Pritchard et al., *supra* note 5, at 200; Lazear, *supra* note 104, at 22-23.



This phenomenon can be visualized in another way. Take the situation where you have two associate professors. Professor A spent three years as an assistant professor and has just been promoted to associate professor. Professor B was eight years as an assistant professor and has just been promoted to associate professor. Given Professor A's rapid rate of promotion, it is much more likely that Professor A will be a full professor before Professor B, in spite of the fact that Professor B is likely older than Professor A. The speed of prior success is an indicator of the speed of future success. Finally, this problem can be visualized as one of censorship. In a study done of any given stratum's promotion rates, the very best employees that were in that stratum have already been promoted to higher levels. A comparison of those remaining excludes the most competent of those older employees who were in that stratum and compares the less able group to the newer and younger employees entering the stratum who include the average performers, the stars, and the superstars. The stars and superstars from the older group have been censored out of the analysis, and the comparison is one that, absent adjustments, will show differences in promotion rates in the absence of any discrimination.

There is national data available on promotion rates by age across companies and industries. Generally, this data indicates that, on average across a broad spectrum of employers, promotion rates rise quickly and early in employee careers, and then gradually decline over careers so that employees with thirty years or more tenure have promotion rates half to one-third of those relatively newly hired.<sup>108</sup> While superficially this can be seen as a negative for older workers, in fact, the phenomenon is generally positive for both younger and older workers. An employee promoted young retains the benefit of that promotion for a long time. Identical promotion rates for younger and older employees would generally mean more promotions later in careers, to the average disadvantage of all employees.

In the case of the large industrial conglomerate discussed earlier, plaintiffs claimed that promotion rates for younger employees were greatly in excess of those for older employees. Within any particular employment stratum, plaintiffs argued their statistical analysis showed statistically significant differences in promotion rates for older employees as compared to those who were younger. On the other hand, statistical evidence also showed that, across the fourteen employment strata studied, the average age of employees increased substantially as one moved higher up the corporate structure. The average age for the

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108. See McCue, *supra* note 9, at 188.

beginning management strata was approximately forty-three, while the average age in the strata at the top of the management structure was about fifty. The senior officers were, on average, just below fifty-five in average age.<sup>109</sup>

Statistics on promotions at this company were available back to at least 1975. During the period contested in the lawsuit, 2001 through 2005, the promotion rates for older employees generally exceeded the promotion rates for older employees during the period from 1975 to 2000. A longitudinal comparison of five-year cohort promotion rates from 1975 through 2005 showed that the pattern for each cohort was similar. While there were increases or decreases in promotion rates that applied generally to all cohorts during particular years when the company was expanding or retracting, the pattern showed a very early and substantial increase in promotion rates after employees were hired, reaching a high point after several years, and then gradually decreasing through thirty years of tenure.<sup>110</sup> Applying a standard regression analysis across cohorts at any earlier point in this twenty-five year longitudinal study demonstrated a statistically significant deviation between older and younger employees in promotion rates, at least as pronounced as the statistical significance found during the class period of 2001 through 2005.<sup>111</sup> The historic pattern of apparent adverse promotion rates for older and younger employees, however, resulted in an ultimate employment pattern where older employees occupied a very substantial proportion of most senior positions in the company. As this example demonstrates, age is different than gender or race claims because we all age. Someone promoted, for example, at ages thirty-five and thirty-seven, most likely occupies the more advanced position when they are forty-five, fifty, or sixty years old.

It is theoretically possible to adjust a regression analysis to appropriately reflect the non-age based differences between promotion rates for younger and older employees. However, these adjustments are likely to be controversial and difficult to implement. The essential problem is that there is not an agreement on what the difference should be, absent discrimination. The attempts to create such systems have been overly complex. They have been based on multiple subjective assumptions, which will most often be in dispute, but will determine the result.<sup>112</sup>

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109. See Appendix 2.

110. See Appendix 3.

111. See Appendix 4.

112. Examples of those systems are the (i) Predictive Computer Model, Grossman, *supra* note

Regressing for employment evaluation results is one method that may adjust for differing performance within an employment stratum. One might assume that within any employment stratum, employee evaluations should reflect differences in average ability between younger and older employees caused by past promotions of the most able older employees. However, there are at least two problems in adjusting a promotion regression for performance evaluations. First, the performance evaluations may not be sophisticated enough for fine statistical evaluation. For example, in many settings it is not unusual to have a very high percentage of employees rated above average with little differentiation. Many evaluation systems measure and evaluate immediate past-performance and do not have a measure for the employee's capacity to handle increased responsibility. These attributes may be more likely evaluated at the time promotion is considered. Second, even where there is substantial differentiation, there may well be a disagreement among the parties as to whether or not the employee evaluations are accurate or also reflect age discrimination.

There is a significant body of law in the age discrimination area which holds that where an employer makes promotion decisions on the basis of evaluations, an appropriate statistical study must regress for that factor.<sup>113</sup> However, if the evaluations can be shown to be "tainted" by age discrimination, the evaluations would not have to be included in the regression.<sup>114</sup> Generally, it is the responsibility of the defendant to show that the omitted variable will substantially effect the outcome.<sup>115</sup> The question remains: if the variable is significant, who has the burden of proof to demonstrate that it is "tainted" or not and how does the court evaluate such a claim? Logically, the plaintiff should prove "taint" as part of his burden of showing discrimination. The plaintiff normally offers the statistics to prove pattern and practice or pretext.<sup>116</sup> Proving that the statistics create an inference logically includes a demonstration

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2, at 260-61, (ii) Duration Dependence, *id.* at 262-65, (iii) Performance Evaluations, *id.* at 265-67, and (iv) Age-Promotion Model, Pritchard, *supra* note 5, at 201.

113. See, e.g., *Coleman v. Quaker Oats Co.*, 232 F.3d 1271, 1281 (9th Cir. 2000); *Hutson v. McDonnell Douglas Corp.*, 63 F.3d 771, 777 (8th Cir. 1995); *Rea v. Martin Marietta Corp.*, 29 F.3d 1450, 1456 (10th Cir. 1994); *Mastie v. Great Lakes Steel Corp.*, 424 F. Supp. 1299, 1320 (E.D. Mich. 1976). Failure to include all the historic evaluation data or the data relied on by the decision maker in the regression skews the result. See *Morgan v. UPS*, 380 F.3d 459, 470-71 (8th Cir. 2004); *Diehl v. Xerox Corp.*, 933 F. Supp. 1157, 1168-69 (W.D.N.Y. 1996).

114. *Morgan*, 380 F.3d at 470; see also *Bazemore v. Friday*, 478 U.S. 385, 399-400 (1986) (Brennan, J., concurring) (rejecting regression analysis of salary because it contained salary figures reflecting the effect of racial discrimination).

115. See PAETZOLD & WILBORN, *supra* note 11, § 6.15.

116. E.g., *Morgan*, 380 F.3d at 463.

that they have included the proper regression factors. If the defendant is required to prove a negative lack of taint, the burden of proof, rather than production to prove the non-discriminatory rationale, is shifted to the defendant contrary to the standard *McDonnell Douglas* formulation.<sup>117</sup> This issue is not yet settled, but if the burden of proof is to remain with the plaintiff on the issue of pretext, the plaintiff should prove the "taint."<sup>118</sup>

Plaintiffs will offer evidence to show that there is a difference in the evaluations between the older and younger employee group in any particular company employment stratum. The defendant will respond that this is normal and expected given the censorship of the most able senior employees from the studied group. There are simply no available benchmarks in the literature to show the extent to which such evaluations will vary absent age discrimination. In fact, the phenomenon may be quite company-specific depending on the size of the employment strata and the speed of promotion within the company. It is now clear, however, that typically evaluations compared in a given company strata will show some advantage in younger workers.<sup>119</sup> That fact alone does not establish that the evaluations are "tainted." Where historic evaluation results are available, it is possible to compare the current evaluations to the historic results to see if there are significant changes for an older group of employees. It may be possible to compare evaluations within a company to show that a particular decision-maker has a different and discriminatory pattern of conduct. Absent definitive proof of whether or not the evaluations are discriminatory, permitted exclusion may depend entirely on where the burden of proof is assigned.

Arguably, another way to adjust for the differences in a stratum between older and younger employee promotion rates is to regress for

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117. *Compare* *Hutson v. McDonnell Douglas Corp.*, 63 F.3d 771, 776-77 (8th Cir. 1995) (holding that once the defendant has met its burden of production by articulating a legitimate, nondiscriminatory explanation for the employee's termination, the burden shifts back to the plaintiff to prove the explanation is a pretext for discrimination), *with* *Gross v. FBL Fin. Serv.*, 129 S. Ct. 2343, 2352 (2009) ("The burden of persuasion does not shift to the employer to show it would have taken the action regardless of age . . .").

118. *See* *Trout v. Hidalgo*, 517 F. Supp. 873, 881 (D.D.C. 1981) (explaining that under current law, plaintiffs have the burden of proof in discrimination cases; and that statistics often play a role in that proof); *Ottaviana v. State Univ. of N.Y.*, 875 F.2d 365, 370 (2d Cir. 1989) (explaining the Supreme Court's process for evaluating disparate treatment claims and explaining that "the ultimate burden of persuasion rests always with the plaintiff . . .").

119. *See, e.g.,* *Coleman v. Quaker Oats Co.*, 232 F.3d 1271, 1285 (9th Cir. 2000) (demonstrating that employees of the defendant over the age of forty tended to receive lower rankings than employees below the age of forty); *cf. Grossman, supra* note 2, at 259 ("If one were to look only at the relationship between age and likelihood of promotion, over time in a totally nondiscriminatory environment a negative relationship emerges . . .").

the speed of success; that is, to compare the length of time spent in the particular stratum, the length of time spent within the corporation to reach that stratum, and the employee's prior speed of promotion before joining the company. Unfortunately, this information is often difficult to obtain and it is impossible to tell how much, if any, of that prior speed of success may itself have been due to discriminatory decisions. Finally, a regression for all prior work experience is very close to regressing for age in a study of the impact of age. All of the above makes regression analysis of the promotion rates at a point in time of dubious value when interpreting claims of age discrimination.

Another confounding factor in promotion age discrimination disputes is that the impact of age on decision makers, whether real or perceived, may be entirely different depending upon whether the employees are in their forties, fifties or sixties. A study that looks at the entire range of those over forty may miss significant differences. It is entirely possible that persons in their forties may be favored while persons over sixty may be disfavored.<sup>120</sup> On the other hand, selecting an arbitrary group of people for analysis may simply be an effort to tailor the statistical result to an anomaly in a small group of persons. By selecting a group of persons around the age of the complaining individuals, it is possible to avoid both problems. For example, if the complainant is forty-eight years old, selecting persons from the five-year group forty-six through fifty (two years on each side of the subject) and comparing them to persons under forty is both defensible in terms of the question presented and avoids the risk that persons not subject to the same perceptions as the subject are being considered.

There are other methods available to measure age discrimination in promotion. First, there are at least a few national studies showing promotion rates at various ages. While these may often show trends rather than precise rate, evidence that the subject company's promotion rates for the older age group dropped significantly below those averages, may, if unexplained, be probative of age bias. However, the comparison will be difficult where the companies age demographics or tenure pattern differ from the national averages. Second, if the company's evaluation data is well calibrated, a regression that accounts for difference in evaluation and continues to show a statistically significant age bias will be probative of discrimination. However, it is important to appreciate just how probative the statistics may be in individual cases. For example, if the well done statistical analysis shows an impact on five percent of the class, that proof should have only a slight impact on the

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120. See, e.g., *Coleman*, 232 F.3d at 1283.

individual case. However, if the well done statistical analysis shows on impact on fifty percent of the class, the probative value of this study on each individual case should be significant. Both of these studies may show a very significant deviation but the impact on the individual case should be quite different.

Third, if there has been a substantial decrease in the average age of persons at the top levels of the company, this may be significant. However, it is certainly the case that as people retire they will normally be replaced by younger individuals.<sup>121</sup> With a relatively stable workforce in terms of size, the number leaving for retirement at any point in time should not change dramatically and one can expect the average age to remain fairly stable. A substantial decrease in the average age of senior management is probative of an age issue in the absence of a reasonable explanation. On the other hand a workforce with a high percentage of older employees at the highest levels demonstrates the absence of age discrimination against older workers. The non-discriminatory pattern is particularly compelling where the average age of senior management is increasing. Finally, if the company maintains historic promotion records, there ought to be comparable promotion rates for older employees historically and for the current period. Again, there may be explanations for a change, favoring younger employees, but a significant change in the absence of a reasonable explanation, ought to be probative of age discrimination.

## VI. STATISTICAL EVIDENCE OF AGE DISCRIMINATION IN TERMINATION CASES

Cases involving reductions in force or a significant series of individual terminations often involve the use of statistical evidence by both parties. The employers reason for the termination program will often be economic need and for particular individuals evaluations of performance or job eliminations. The statistical analysis often begins with a simple comparison between the percentage of older versus younger employees terminated. When these simple comparisons demonstrate a significant deviation in favor of younger employees, the employer will respond that the analysis fails to compare correct employee groups. The employer will argue that it phased out certain job categories that were no longer necessary or that it relied upon job evaluations so that job category or evaluations need be considered in any

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121. *E.g.*, *Block-Victor v. CITG Promotions, L.L.C.*, 665 F. Supp. 2d 797, 809 (E.D. Mich. 2009).

analysis.

If the defense is that certain job categories were eliminated, the primary question will be whether or not those jobs were actually eliminated or whether the defense is a pretext. The answer will be determined by the extent to which the job duties in eliminated job categories have actually been eliminated or simply spread to other employees. Ultimately, a fair comparison for the regression will be of those employees who were or are performing similar continuing job duties within the company.

If an employer maintains that the basis for the termination was some form of performance evaluation, absent a showing of bias in the evaluations, those evaluations need to be used in the regression.<sup>122</sup> General statistics, without more, are unlikely to rebut the employer's offered reason.<sup>123</sup> If evaluations are reasonably precise and completely included in a regression and the result remains a statistically significant deviation in favor of younger employees, this will create an inference of discrimination both to support a *prima facie* case and as evidence of pretext. As discussed earlier, where evaluations have been used for the purposes of determining layoff priority, older workers will score, on average, below younger workers in the company as a whole and within any employment strata. Therefore, there may be a greater percent of older workers laid off in the absence of age discrimination. This phenomenon may cause a decrease in the average age of the workforce in those categories. Evidence of a significant reduction in average age for an employee group may be probative if not adequately explained by evaluation results.<sup>124</sup> It is obvious, however, that when any group of employees is replaced by newly hired or promoted group, the average age may decrease because newer employees will generally be younger. But with a reduction in force ("RIF"), there should be a limited number of new hires so that average age in a RIF analysis should not be impacted by new and younger hires.

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122. See *Smith v. Xerox Corp.*, 196 F.3d 358, 371 n.11 (2d Cir. 1999); *Furr v. Seagate Tech.*, 82 F.3d 980, 986-87 (10th Cir. 1996); *Rea v. Martin Marietta Corp.*, 29 F.3d 1450, 1456 (10th Cir. 1994) (discussing how in order to create an inference of discrimination, the analysis must eliminate nondiscriminatory explanations).

123. *EEOC v. Texas Instruments, Inc.*, 100 F.3d 1173, 1184-85 (5th Cir. 1996).

124. *Compare Bevan v. Honeywell, Inc.*, 118 F.3d 603, 611 (8th Cir. 1997) (plaintiff's statistical evidence of the defendant company's trend toward placing younger persons in director-level positions and eliminating older persons was admissible as probative circumstantial evidence of pretext), with *Rose v. Wells Fargo & Co.*, 902 F.2d 1417, 1423 (9th Cir. 1990) (holding that plaintiff's statistical evidence was not probative because "[t]he statistical disparity in regards to termination rates is explained by the fact [that] older persons tend to occupy" the positions in question).

## VII. STATISTICAL EVIDENCE IN AGE CLASS ACTION DETERMINATIONS

Statistical analysis has achieved a prominent but misunderstood role in the battle over class certification. As courts increasingly accept the propositions that more than a *prima facie* showing of the Rule 23 elements is necessary (that the plaintiff must show these elements by a preponderance of the evidence and that expert testimony will be thoroughly examined) courts will take a more rigorous look at the validity of statistical evidence and the actual impact of that evidence on the elements of Rule 23. At the class certification stage, the court will have to make a decision about which statistical analysis is correct. In class actions where the focus is on injunctive relief and there are numerous members of the class, statistical evidence showing commonality will be sufficient to carry the day since the (b)(2) class does not require a showing of predominance.<sup>125</sup> Commonality has a relatively low threshold of proof so that where certification under Rule 23(b)(2) is appropriately sought and the statistical evidence makes a showing that the party “has acted or refused to act on grounds generally applicable to the class” there is sufficient statistical evidence to certify the class for “final injunctive relief.”<sup>126</sup> On the other hand, where the significant purpose of the litigation is damages for a class, the statistical analysis must be much more exact.<sup>127</sup> With a proposed Rule 23(b)(3) class asserting damages, there must be a showing that the questions of law or fact common to class members “predominate” over questions affecting only individual claims and that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy.<sup>128</sup>

The disparate impact case relies on a statistical analysis both for the merits and the Rule 23 determination. A properly constructed regression analysis can show that a certain employment practice led to employment results disadvantaging older employees. The employment practice, but not necessarily any individual action, is common to all class members. Causation at the individual level is not necessary for injunctive relief so the skewed employment result supports the claim for injunctive relief and a 23(b)(2) class. Whether the statistics will support a 23(b)(3) damage class is a much more difficult question even in a disparate

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125. FED. R. CIV. P. 23(b)(2).

126. *Id.*

127. *Cooper v. S. Co.*, 390 F.3d 695, 720-21 (11th Cir. 2004) (citing *Allison v. Citgo Petroleum Corp.*, 151 F.3d 402, 415 (5th Cir. 1998)).

128. FED. R. CIV. P. 23(b)(3).



impact class. If the statistical work shows that all or most of the proposed class is impacted by the practice, predominance is established. However, if the statistics demonstrate that only some class members were impacted, a damage claim in a disparate impact case will still involve individual questions to determine which class members were negatively impacted and are entitled to damages.

In those disparate treatment cases where the employer relies on an assessment of the employee's ability or productivity for the decision, class actions involving promotion or termination involve substantial individual questions. In these cases the liability of the employer to the individual will depend on an analysis of that individual's productivity as compared to those who were paid more, were promoted or were not terminated. These are inherently individual questions. The amount of damage that an individual may have suffered, assuming liability, may sometimes be common but more often is an individual question depending upon the timing of the decision, the individual's base pay, the remaining available period for work or offsets for re-employment, etc. Can statistical evidence, perhaps combined with company-wide anecdotal evidence, create a scenario where it is fair to conclude that common questions predominate?

Statistical evidence is often offered in this context to establish a pattern or practice. If there is a finding of pattern or practice, this creates an inference that a discriminatory act occurred with regard to the individual claimants in the class.<sup>129</sup> In the Rule 23 analysis the weakness of any statistical evidence, however, is that while statistics can demonstrate that a particular employment result across a class is not random, they cannot tell you whether there was causation or discrimination in any individual case. Except for the very unlikely situation in which statistics demonstrate that all observed results are contrary to expectations, there will always remain individual questions about whether any particular determination was caused by discrimination or appropriate considerations.

Statistical significance alone is not a particularly helpful tool in resolving this issue. A high statistical significance will tell you that the likelihood of a particular result occurring by chance is remote. It will not necessarily tell the degree to which the many results were inappropriate, and particularly, cannot tell you which of the individual decisions were inappropriate.

In *Teamsters*, the United States Supreme Court described the evidence necessary to show a pattern and practice claim as actions of the

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129. See *Int'l Bd. of Teamsters v. United States*, 431 U.S. 324, 339-40 (1977).

employer demonstrating that discrimination was its ordinary course of conduct rather than the exception.<sup>130</sup> “Stated differently, the class must prove that the ‘discrimination was the company’s standard operating procedure-the regular rather than the unusual practice.’”<sup>131</sup> To illustrate the statistical issue this presents for class certification, assume that the plaintiff presents a statistical study of an employer’s workforce with a purported class of 5,000 employees over forty where there are also 5,000 employees under forty. The plaintiff’s statistical evidence, after some adjustments for appropriate variables, shows that the older group received 1,300 promotions, while the younger group received 1,500 with a discrepancy of 200 and that the standard deviation is well in excess of three. Plaintiff argues that 200 individuals experienced discrimination in promotion demonstrating a pattern and practice, commonality and predominance. Conversely, defendant argues that even crediting plaintiff’s statistics only four percent of the class arguably experienced discrimination while a very large percentage of persons in the class were actually promoted. Does this evidence demonstrate that discrimination was the exception rather than the rule?

The impact on the litigation of a finding of pattern and practice is to create an inference that each of the individual class members experienced discrimination. When their individual cases are tried, that individual class member begins with the inference that discrimination occurred. Where the statistics show only a small percent of the defined class has experienced discrimination, such an inference seems inappropriate. Where the relief sought is injunctive and the standard is commonality, this statistical pattern should be sufficient for certification. Where the statistical work is correctly done those statistics are evidence, across a broad range of decisions, of the presence of inappropriate considerations justifying injunctive relief. Where the statistics show that a significant percent of the class, say fifty percent, was actually impacted by the decisions an inference is appropriate.

Where damages are sought in the disparate impact or disparate treatment of age discrimination case, the class must be certified under Rule (b)(3).<sup>132</sup> Even where a pattern and practice is found and the statistical evidence shows that the potential discrimination may have impacted twenty or thirty percent of the class, it is difficult to conclude predominance is present. There will be a common statistical question,

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130. *Id.* at 336; *see also* *Morgan v. United Parcel Serv. of Am., Inc.* 380 F.3d 459, 463 (8th Cir. 2004).

131. *See Morgan*, 380 F.3d at 463 (quoting *Teamsters*, 431 U.S. at 336).

132. *See* FED. R. CIV. P. 23(b)(3).

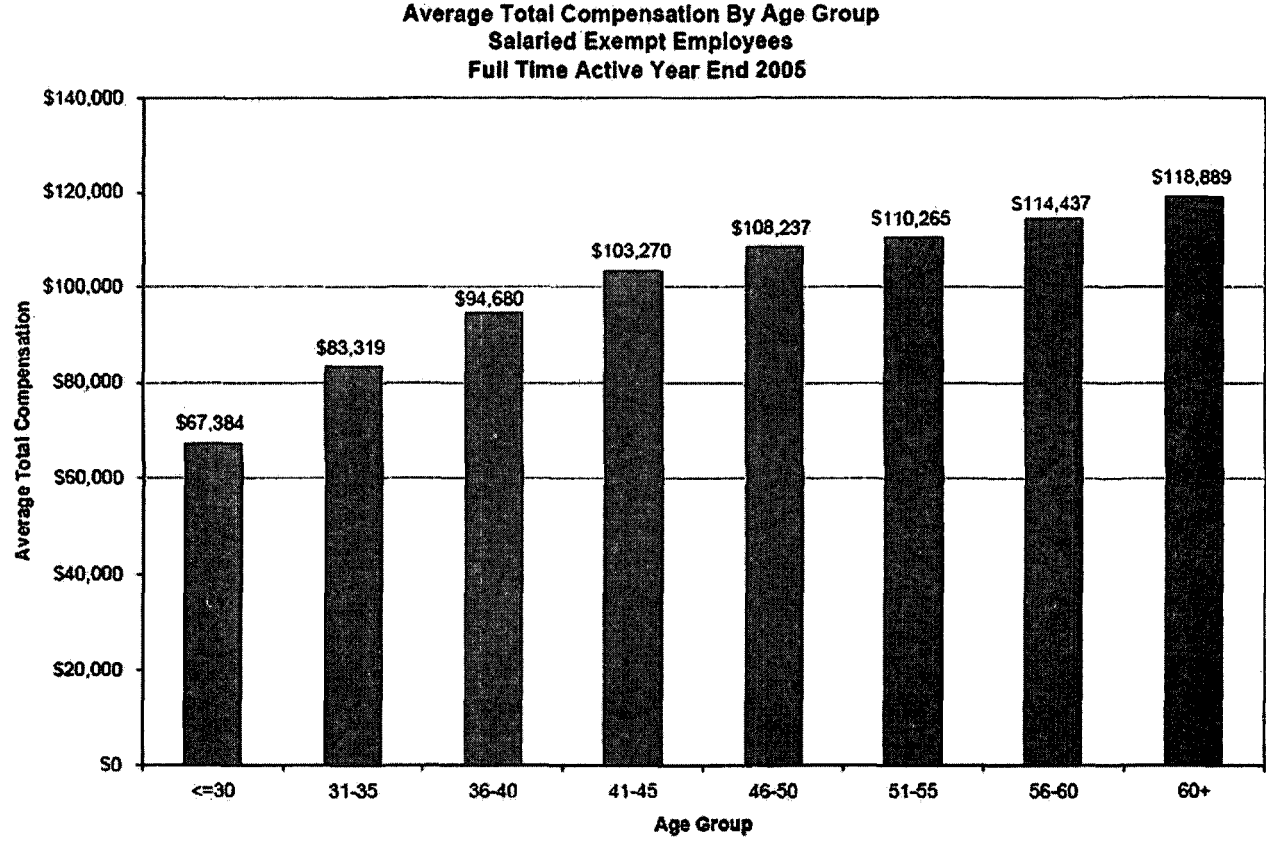
but each individual case will depend on an evaluation of individual performance and damage quantification. These individual questions will overwhelm the common question.

### VIII. CONCLUSION

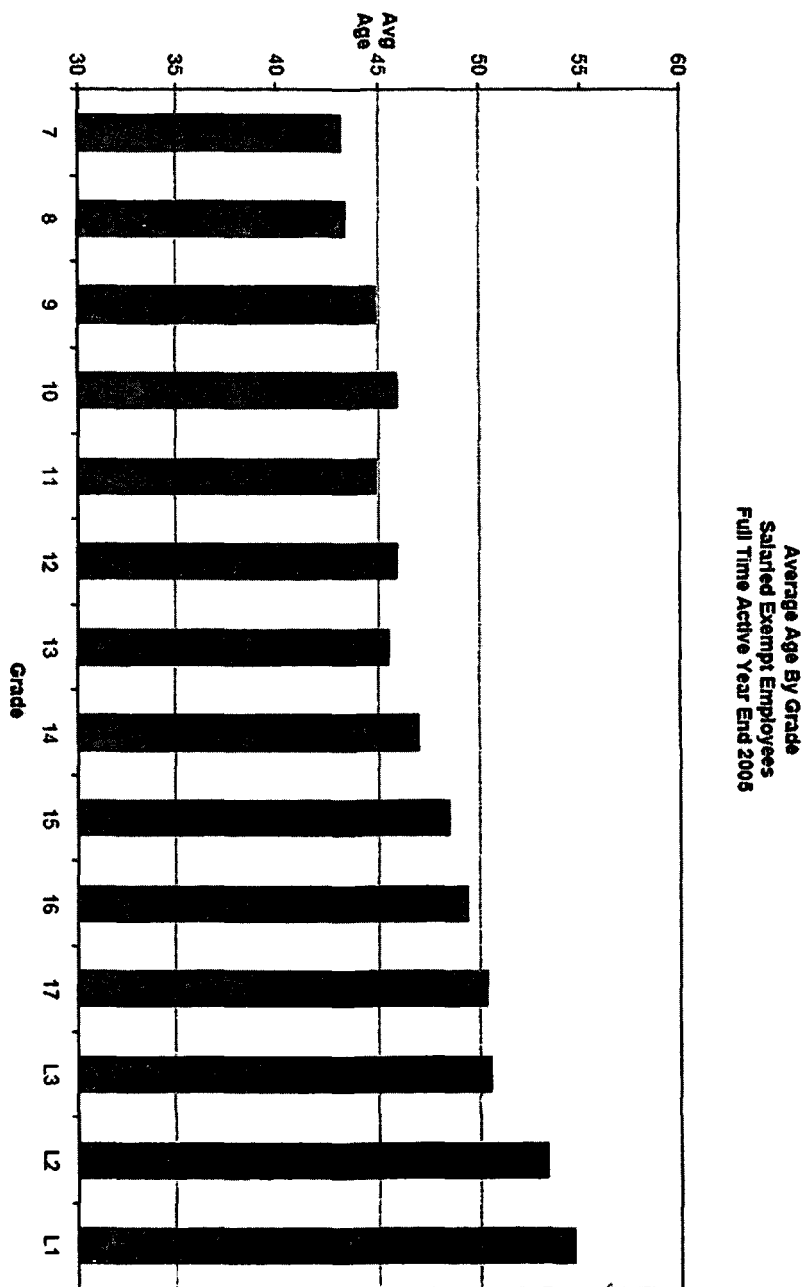
Because we, as lawyers, are not always intimately familiar with statistical evidence, we have, at times, tended to place undue emphasis and reliance on it, particularly in areas like age discrimination claims. Statistical evidence can be useful in evaluating claims for injunctive relief, but its limitations in damage claims should not be overlooked. While discrimination cases are difficult to prove because motive is often unstated and only in the mind of the decision maker, it should not be an excuse to use statistical evidence for purposes for which it cannot adequately serve. In many areas of the law we evaluate motive on the basis of evidence surrounding individual decisions. Absent statistical evidence showing an impact on a majority of class members, in most damage cases of age discrimination, reliance on individual evidence remains the best and most useful approach.

## **APPENDICES**

## Appendix 1

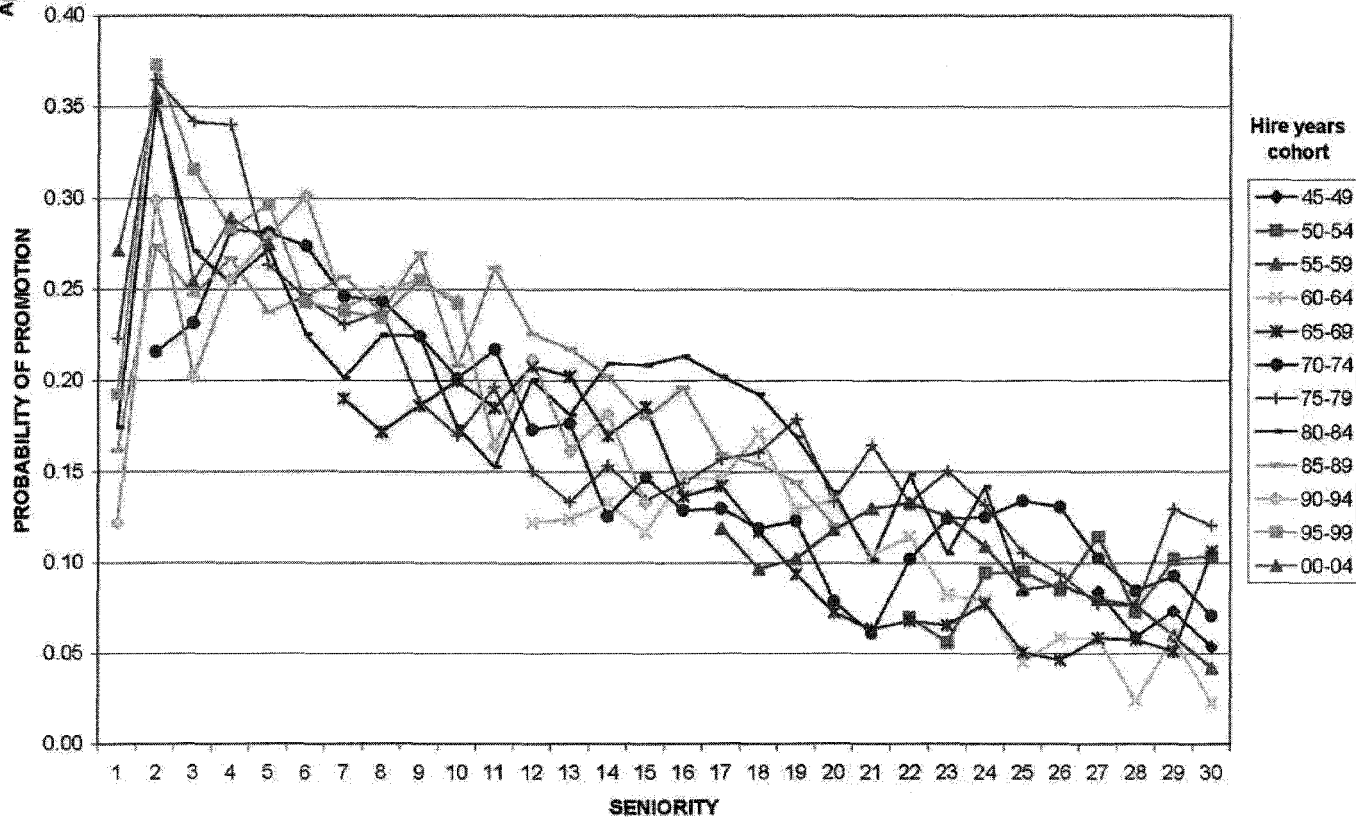


## Appendix 2



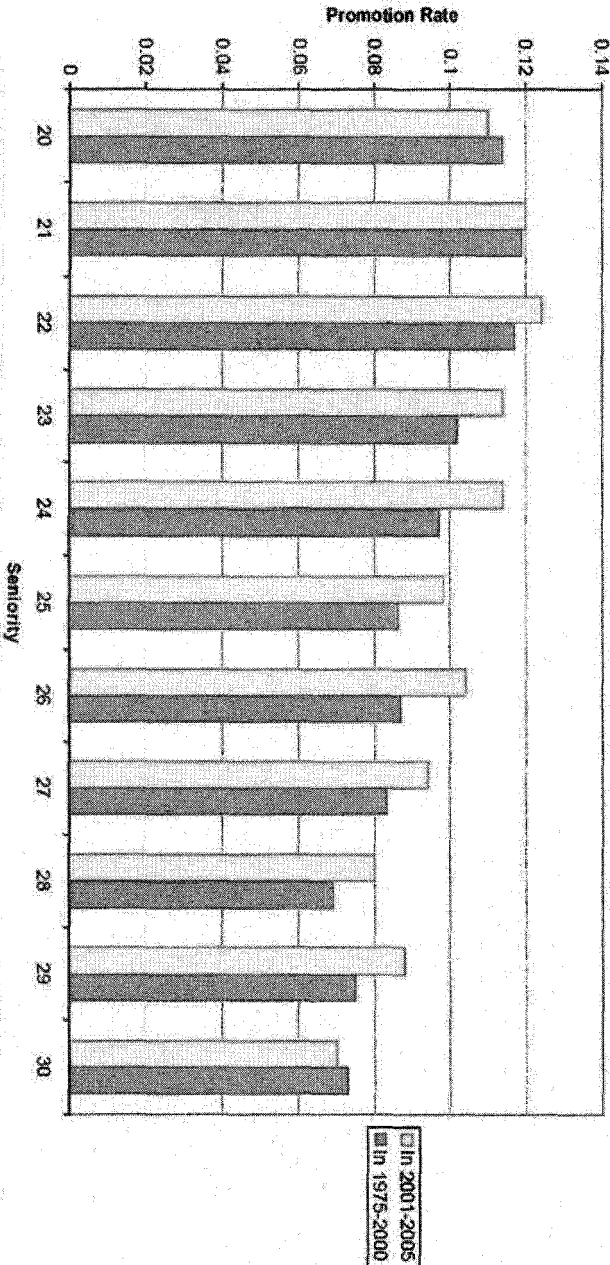
Appendix 3

RELATIONSHIP BETWEEN PROBABILITY OF PROMOTION AND SENIORITY FOR ALL SALARIED NON-DIRECTOR LEVEL EMPLOYEES BY 5 YEAR HIRE COHORTS BY SENIORITY



Appendix 4

Promotion Rates in 2001 - 2005 Period Compared to Promotion Rates During Earlier Period



THE PROMOTION RATE OF MORE SENIOR EMPLOYEES WAS ALMOST ALWAYS HIGHER IN THE RELEVANT TIME PERIOD THAN IN THE EARLIER PERIOD.